What is claimed is:

1. A process for producing a fine tungsten carbide powder, comprising the steps of:

(a) mixing an aqueous ammonium tungstate solution with a carbon powder in a proportion to reduce and carburize ammonium tungstate to form a slurry,

(b) drying the slurry to prepare a precursor,

(c) subjecting the precursor to a reduction and carburization for heating to a temperature, at which a reduction and carburization proceeds, in a non-oxidizing gas atmosphere to form a reduction and carburization product,

(d) mixing the reduction and carburization product with a carbon powder in a proportion required to carburize a W_2C component and/or a W component in the reduction and carburization product into WC, and

(e) subjecting the reduction and carburization product mixed with the carbon powder to a carburization for heating to a temperature, at which a carburization proceeds, in a hydrogen atmosphere.

2. A process for producing a fine tungsten carbide powder according to claim 1, wherein ammonium tungstate in step (a) is at least one of ammonium metatungstate and ammonium paratungstate.

3. A process for producing a fine tungsten carbide powder according to claim 1, wherein a purity of ammonium tungstate in step (a) is at least 99.9% by weight.

4. A process for producing a fine tungsten carbide powder according to claim 3, wherein a purity of ammonium tungstate in step (a) is at least 99.99% by weight.

5. A process for producing a fine tungsten carbide powder according to claim 1, wherein a concentration of the aqueous ammonium tungstate solution in step (a) is within a range of 20-70% by weight.

6. A process for producing a fine tungsten carbide powder according to claim 1, wherein each carbon powder in step (a) and step (d) is a carbon black powder having a purity of at least 99.9% by weight.

7. A process for producing a fine tungsten carbide powder according to claim 6, wherein each carbon powder in step (a) and step (d) is a carbon black powder having a purity of at least 99.99% by weight.

8. A process for producing a fine tungsten carbide powder

according to claim 1, wherein an amount of a carbon (C) powder in step (a) with respect to the tungsten (W) component in ammonium tungstate by atomic ratio C/W is within a range of 3-4.

9. A process for producing a fine tungsten carbide powder according to claim 1, wherein a drying temperature in step (b) is not more than 350°C.

10. A process for producing a fine tungsten carbide powder according to claim 1, wherein the non-oxidizing gas atmosphere of the reduction and carburization in step (c) substantially comprises a nitrogen gas at normal pressure and a CO gas produced by the reaction.

11. A process for producing a fine tungsten carbide powder according to claim 1, wherein a temperature of the reduction and carburization in step (c) is within a range of 900-1600°C.

12. A process for producing a fine tungsten carbide powder according to claim 11, wherein a temperature of the reduction and carburization in step (c) is within a range of 1000-1200°C.

13. A process for producing a fine tungsten carbide powder

according to claim 1, wherein a temperature of the carburization in step (e) is within a range of 900-1600°C.

14. A process for producing a fine tungsten carbide powder according to claim 13, wherein a temperature of the carburization in step (e) is within a range of 1000-1400°C.

15. A high-performance fine tungsten carbide powder, wherein an average particle size as measured by the Fischer Subsieve Sizer process is 0.8 μm or less, a maximum particle size in a particle size distribution as measured in accordance with ASTM B430-79 is 1 μm or less, the content of tungsten based on the component excluding a non-metal component is at least 99.9% by weight, and the content of nitrogen and that of oxygen in crystal lattices are respectively within a range of 0.05-0.30% by weight and 0.10-0.60% by weight.

16. A high-performance fine tungsten carbide powder according to claim 15, wherein the content of nitrogen and that of oxygen in crystal lattices are respectively within a range of 0.08-0.20% by weight and 0.10-0.35% by weight.

17. A high-performance fine tungsten carbide powder according to claim 15, wherein a lattice constant of an a-axis and that of a b-axis are respectively within a range of 0.29020-0.29060

nm and 0.28380-0.28420 nm.